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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,072	07/25/2003	Dale Spall	21546-022001	3044

75589 7590 09/24/2010  
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EXAMINER
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XU, XIAOYUN

ART UNIT	PAPER NUMBER
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1797

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/628,072	<b>Applicant(s)</b> SPALL ET AL.	
	<b>Examiner</b> ROBERT XU	<b>Art Unit</b> 1797	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period **will** apply and **will** expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply **will**, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 12-15, 17-19, 21-25, 51-57 and 59-61 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-15, 17-19, 21-25, 51-57 and 59-61 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

Pending claims are 12-15, 17-19, 21-25, 51-57, and 59-61. Claims 16, 20 and 58 were canceled by applicant without prejudice in previous reply filed on 05/25/2007.

The claims 51-55, 57, and 59-61 were rejected and affirmed by BPAI, therefore the said claims will not be addressed. The rejection will maintained for the reasons of the record. For the previously allowed claims 12-15, 17-19, 21-25 and 56, examiner however discovers new facts and now establishes rejection of claims 12-15, 17-19, 21-25 and 56 over prior art.

In view of the BPAI decision filed on 06/11/2010, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set are forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

- (1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,
- (2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

TC 1700 Director's Designee has approved of reopening prosecution by signing below:

/Gregory L Mills/

Supervisory Patent Examiner, Art Unit 1700

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. **Claims 12-15, 18, 21, 22, 24, 25 and 56** are rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer, et al. (U.S. Patent No. 6,312,958) (Meyer) in view of Anderson, et al (U.S. Patent No. 5,474,937) (Anderson '937).

Meyer discloses a liquid marker and a method for marking a hydrocarbon liquid (diesel and gasoline) (see col. 1, lines 44-47) comprising adding a first marker having a molar absorptivity of approximately  $5 \times 10^4 \text{ L mole}^{-1} \text{ cm}^{-1}$  or greater in the wavelength range of about 600-1000 nm, for example squaraines, phthalocyanines or naphthalocyanines, (see col. 4, lines 18-25) and adding a second marker that is a molecular marker (see col. 3, lines 16-28). The markers are molecular markers because they are used to detect adulteration (see col. 3, lines 1-13). Meyer discloses a total concentration of markers at 1-2000 ppb (0.001-2 ppm), which reads on applicant's claimed first marker concentration of between 1 ppb and 10 ppm (see col. 15, lines 29-34). The markers of Meyer are capable of being determined by a handheld IR spectrometer as the markers emit fluorescent light in the near-IR range (see abstract). Markers that fit within the desired range of Meyer, meaning within 600-1200 nm include alcohols such as ethanol or methanol; ethers such as dioxane; ketones such as

acetone; and aliphatic or aromatic hydrocarbons such as octane, xylene (see col. 14, lines 55-67).

Meyer does not expressly teach that the second marker is enhanced by non-radioactive isotope, such as a deuterium atom.

Anderson '937 teaches using a chemical substance that is "a non-radioactive isotope of either a chemical element or an inorganic or organic compound" (see col. 1, lines 64-66). "Any element or compound which can be produced with stable isotopes not generally found in nature is suitable for the chemical substance" (see col. 4, lines 2-5). Anderson specifically teaches labeling molecular markers with a non-radioactive isotopic tracer such as deuterium (see col. 3-4). Examples of molecular markers that Anderson teaches labeling with a non-radioactive isotope include solvents taught by Meyer as markers such as acetone, dioxane, ethanol, methanol, octane or xylene (see col. 4, lines 10-19). The amount of isotopic chemical substance used may be less than 1ppb for certain isotopic compounds and about 1-5 ppb for others (see col. 3, lines 38-43). Such labeling is cheap and obviously can be used as an additional labeling for molecular markers. The heavy atom may be in any position in the molecule of the chemical substance (see col. 4, lines 40-41). Having a variety of hydrogens in the molecule to which to substitute the deuterium creates a number of uniquely identifiable combinations that thereby decrease the chance that more than one shipping vessel will contain the same non-radioactive isotope (see col. 4, lines 40-57).

Anderson '937 teaches that the advantage of the disclosed method is that any compound that can be produced with stable isotopes not generally found in nature may be deuterated (see col. 4, lines 1-5). Additional advantages to Anderson's molecular markers is that they are readily available, easy to make and non-radioactive. Thus, it would have been obvious for one of ordinary skill in the art to modify the reference of Meyer by adding the marker of Anderson '937 or by deuterating at least one of the markers made up of the disclosed markers that can be produced with stable isotopes not generally found in nature in order to gain the advantages of readily available and easy to make markers that are more environmentally friendly.

Anderson '937 discloses the use of a marker for liquids of the type disclosed by Meyer that is artificially enhanced with a non-radioactive isotope. Accordingly, it would have been obvious for one of ordinary skill in the art to use the non-radioactive isotope-enhanced marker of Anderson '937 in addition to, or as a replacement for, the markers used by Meyers. Since Anderson '937 expressly teaches that the chemical marker may be a non-radioactive isotope of the chemical being shipped (see col. 4, lines 1-2), and that the chemical marker may be an organic solvent which, significantly, is the same material being marked and shipped by Meyer, such as acetone, octane, toluene, etc. Hence, it would have been obvious for one of ordinary skill in the art to use a marker that is a non-radioactive isotope of the solvent being shipped by Meyer in order to enhance compatibility between the solvent and the marker.

Meyer teaches that the second marker can be a halogenated hydrocarbon (see col. 9, lines 1-17).

4. **Claims 17, 19 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer in view of Anderson '937, as applied to claims **12-15, 18, 21, 22, 24, 25 and 56** above, and further in view of U.S. Patent No. 5,981,283 to Anderson, II et al. (Anderson '283).

See Meyer in view of Anderson '937, *supra*. Meyer and Anderson do not expressly teach that the second marker is polynuclear aromatic carbons or one of the list of 1,2-diphenylbenzene, 1,4-diphenylbenze, triphenylmethane, etc. recited in claim 57. Anderson '283 patent teaches using such compounds as tagging agents for hydrocarbon fuels (see col. 6 lines 4-15). These tagging agents may be used to determine whether fuel has been adulterated (see col. 2-3). They are compatible in small amounts with the intended use of the fuel and are soluble in the fuel in at least small amounts (see col. 5, lines 44-48). Thus, it would have been obvious for one of ordinary skill in the art to deuterate any of 1,2-diphenylbenzene, 1,4-diphenylbenze, triphenylmethane, etc. as recited in claims 19 and 23 in order to obtain the predictable result of having a readily available, easy to make marker for labeling fuel, because the exemplary aromatic markers disclosed by Anderson '937 would have suggested polynuclear aromatic hydrocarbons to one of ordinary skill in the art. The disclosure of

Anderson '937 of deuterated organic compounds, wherein the hydrogen atoms covalently bound to carbon atoms are replaced with deuterium atoms, would include saturated and unsaturated compounds.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT XU whose telephone number is (571)270-5560. The examiner can normally be reached on Mon-Thur 7:30am-5:00pm, Fri 7:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571)272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RX

/Vickie Kim/  
Supervisory Patent Examiner, Art Unit 1797